



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,891	03/31/2004	Todd Schneider	881-011758-US (PAR)	9081
2512 PERMAN & GREEN 425 POST ROAD FAIRFIELD, CT 06824	7590 09/18/2008		EXAMINER FAULK, DEVONAE	
			ART UNIT	PAPER NUMBER
			2615	
			MAIL DATE	DELIVERY MODE
			09/18/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/815,891

**Applicant(s)**

SCHNEIDER ET AL.

**Examiner**

DEVONA E. FAULK

**Art Unit**

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-10 and 12-201 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-10, 12-20 and 29-41 is/are allowed.
- 6) ☒ Claim(s) 21, 23-25, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, regarding the newly recited claim language, filed 3/31/04, with respect to claims 1,3-19 have been fully considered and are persuasive. The rejection of claims 1,3-19 has been withdrawn.
2. Applicant's arguments filed 3/31/2004 have been fully considered but they are not persuasive regarding claims 21 and 25.
3. Applicant's arguments, regarding the newly recited claim language, filed 3/31/04, with respect to the rejection(s) of claim(s) 21 under 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Brennan.
- 4.
5. Claims 2,11,22,26 are cancelled and claims 36- 41 are new.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 21,23-25,27,28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano et al. (US 5,136,577) in view of Brennan (US 6,236,731)..

Regarding claim 21, Amano discloses a method of providing protection against an acoustic shock, the method comprising:

an oversampled analysis module for transforming an input signal into a plurality of oversampled sub-band signals in a frequency domain (division and decimation process part 2, Figures 4 and 5; column 8, lines 44-67);

a processing module for adaptively processing the sub-band signals to remove an acoustic shock event including processing each sub-band signal to remove a periodic acoustic shock event (echo canceller group 4, Figure 5; the echo being the acoustic shock event that is removed; column 8, lines 60-column 9, line 2; Amano discloses a sub-band echo canceller group that includes a group of echo cancellers for cancelling the echo in each of bands; 5; column 1, lines 60-65 describes the echo canceller group 40; column 8, line 60- column 9, line 2 teaches that the echo canceller group of Figure 5 is like echo canceller group 40 of Figure 1);

and combining the processed sub-band signals to generate an output signal (synthesis filter 72, Figure 5; column 9, lines 12-15).

Amano teaches of an oversampled analysis and synthesis filterbank. Amano fails to teach of using the WOLA method which is a type of oversampled filterbank and of block processing the input signal. Brennan teaches of using WOLA analysis (oversampled filterbank 26 uses the WOLA method, Figures 1 and 3; column 6, lines 29-39; block processing is implicit) and synthesis (synthesis filterbank 30, uses the WOLA method 30, Figures 1 and 4; column 8, lines 33-65). It would have been obvious to modify Amano by using the WOLA analysis and synthesis method for the benefit of providing more flexible and efficient processing.

Claim 23 is dependent upon claim 22. Regarding claim 23, Amano as modified teaches adaptively filtering the delayed sub-band signal and subtracting the sub-band signal and the result of the filtering step (subtractions 41<sub>1</sub>-42<sub>n</sub> Figure 5; column 8, lines 60- column 9, line 2) . The examiner asserts that there is an inherent delay due to the division and decimation part.. Amano teaches of subtracting the sub-band signal and the result of the filtering step. Amano fails to teach of adding the sub-band signal and the result of the filtering step. However, the examiner asserts that an adder is well known in the art and is interchangeable with a subtractor. It would have been obvious to try to use an adder with a reasonable expectation of success.

Claim 24 is dependent upon claim 23. Regarding claim 24, Amano as modified discloses adjusting the filtering (Amano's use of adaptive filters reads on adjusting the filtering).

Regarding claim 25, Amano discloses a system for providing protection against an acoustic shock, the device comprising:

an oversampled analysis module for transforming an input signal into a plurality of oversampled sub-band signals in a frequency domain (division and decimation process part 2, Figures 4 and 5; column 8, lines 44-67);

a processing module for adaptively processing the sub-band signals to remove an acoustic shock event (echo canceller group 4, Figure 5; the echo being the acoustic shock event that is removed; column 8, lines 60-column 9, line 2); and

an oversampled synthesis module for synthesizing the processed sub-band signals to provide an output signal (synthesis filter 72, Figure 5; column 9, lines 12-15).

Amano teaches of an oversampled analysis and synthesis filterbank. Amano fails to teach of using the WOLA method which is a type of oversampled filterbank. Brennan teaches of using WOLA analysis and block processing (oversampled filterbank 26 uses the WOLA method, Figures 1 and 3; column 6, lines 29-39; block processing is implicit) and synthesis (synthesis filterbank 30, uses the WOLA method 30, Figures 1 and 4; column 8, lines 33-65). It would have been obvious to modify Amano by using the WOLA analysis and synthesis method for the benefit of providing more flexible and efficient processing.

Claim 27 is dependent upon claim 26. Regarding claim 27, Amano As modified teaches adaptively filtering the delayed sub-band signal and subtracting the sub-band signal and the result of the filtering step (Amano; subtractors 41<sub>1</sub>-42<sub>n</sub> Figure 5; column 8, lines 60- column 9, line 2) . The examiner asserts that there is an inherent delay due to the division and decimation part. Amano teaches of subtracting the sub-band signal and the result of the filtering step. Amano as modified by Brennan fails to teach of adding the sub-band signal and the result of the filtering step. However, the examiner asserts that an adder is well known in the art and is interchangeable with a subtractor. It would have been obvious to try to use an adder with a reasonable expectation of success.

Claim 28 is dependent upon claim 27. Regarding claim 28, Amano as modified by Brennan discloses adjusting the filtering (Amano's use of adaptive filters reads on adjusting the filtering).

***Allowable Subject Matter***

8. Claims 1,3-10,12-20,29-41 are allowed.

Regarding claims 1,7,10,18,34 and 36 prior art Brennan discloses a method of providing protection again acoustic shock, the method comprising the steps of:

performing a pattern analysis on an input signal in a time domain, including: at an oversampled analysis filterbank, transforming the input signal to a plurality of band signals in a frequency domain, and performing a feature extraction from the input signal and performing a feature extraction from the plurality of band signals to identify a parameter space corresponding to a signal space of the input signal (analysis filterbank 26 performs a pattern analysis on an input signal, Figure 1; column 4, lines 41-52);applying a rule-based decision to the parameter space to detect an acoustic shock event (inherent in digital signal processor 34; processor 34 determines gain adjustments based on characteristics of the frequency band signals and determines when those adjustments need to be made, column 10, lines 23-29 and 37-47; since a determination is made as to when gain adjustments need to be made, it is inherent that the levels of the input signals have to be detected and are one of the characteristics that determine when adjustments are to be made and this reads on the claim language as recited with the rule-based decision being whatever is used to make the decision that the gain needs to be adjusted); and removing the acoustic shock event (signal

processor 34, Figure 1 determines gain adjustments which read on removing the acoustic shock event, Figure 1; column 10, lines 23-37 and 37-47). Prior art Amano (US 5,136,577) discloses transforming an input signal into a plurality of oversampled sub-band signals in a frequency domain (division and decimation process part 2, Figures 4 and 5; column 8, lines 44-67); adaptively processing the sub-band signals to remove an acoustic shock event (echo canceller group 4, Figure 5; the echo being the acoustic shock event that is removed; column 8, lines 60-column 9, line 2); and combining the processed sub-band signals to generate the output signal (synthesis filter 72, Figure 5; column 9, lines 12-15).

Regarding claims 1 and 10, the prior art or combination thereof fails to disclose or make obvious determining a shock flag based on each of the input signal and band signal feature extractions and removing the acoustic shock based on the shock flags.

Regarding claims 7 and 18, the prior art or combination thereof fails to disclose or make obvious determining a shock flag based on each of the input signal and band signal feature extractions and performing gain control based on the shock flags and the features extracted from the input signal and the band signals.

Regarding claims 34 and 36, the prior art or combination thereof fails to disclose or make obvious delaying the input signal to the WOLA analysis to allow time to obtain fast broadband features to aid in the interpretation of the WOLA analysis results and performing gain control based on features extracted from the input signal and the band signals.



Claims 3-9,12-17,19,20,29-33,35 and 37 are allowed due to dependency on claims 1,7,10,18,34 and 36.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVONA E. FAULK whose telephone number is (571)272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devona E. Faulk/  
Examiner, Art Unit 2615

/Vivian Chin/  
Supervisory Patent Examiner, Art Unit 2615